

TRISTAR 240
INSTRUCTION MANUAL
FOR
SOLID STATE AM 120 CHANNEL
CITIZEN BAND 2-WAY RADIO

SPECIFICATIONS

TRANSMITTER SECTION

POWER OUTPUT	4 Watt Max (AT 13.8V DC)
EMISSION	6A3
SPURIOUS RESPONSE REJECTION	All harmonic and spurious suppression greater than F.C.C and D.O.C. requirements
MODULATION	AM, 90% typical

RECEIVER SECTION

CIRCUIT TYPE	Dual conversion superheterodyne with RF stage and 455 KHz ceramic filter
FREQUENCY	1 crystal-controlled PLL, 120 channels in the 27 MHz Citizens Band
SENSITIVITY	1.0uV for 10 dB S/N
SQUELCH RANGE	1mV
SELECTIVITY	60 dB down at ± 10 KHz
IF FREQUENCY	1st IF: 10.695 MHz 2nd IF: 455 KHz
IMAGE REJECTION	55 dB
AUDIO OUTPUT	2.5W maximum at 8 ohm load
CURRENT DRAIN	250 mA on standby (no signal)
CURRENT DRAIN (MAXIMUM)	Less than 1.5A
ANTENNA	Nominal 50 ohms impedance
POWER SOURCE	Operates from nominal 13.8 volts DC, negative or positive ground system
RF GAIN RANGE	30 dB
S-METER SENSITIVITY at S-9	100uV
DELTA-TUNE	± 1.2 KHz MIN.
DIMENSIONS (HOUSING)	18.5Cm W \times 22.1Cm D \times 5.6Cm H
WEIGHT	1.75 Kg

DESCRIPTION

This model is an all-transistor 2-way radio transceiver for mobile operation. A frequency synthesizer circuit provides crystal controlled PLL transmit and receive channels in the 27 MHz Band, engineered for trouble-free performance. Your transceiver uses heat resistant transistors in all critical areas. Current drain on 12 volts DC is exceptionally low. Operation over long periods is feasible even with your engine turned off. The transceiver may also be operated from A.C. when used with an optional Power supply.

RECEIVER

The receiver is a sensitive and highly selective dual-conversion superheterodyne type providing crystal-controlled PLL operation on all 120 channels. The circuit incorporates effective Automatic Noise Limiter and Noise Blanker circuits. A ceramic filter provides sharp selectivity and high adjacent channel rejection. As a result, transmissions on adjacent channels cause minimum interference.

A variable squelch control is incorporated to "silence" the receiver when no signals are being received. The squelch circuit is adjustable providing varying degrees of sensitivity to incoming signals.

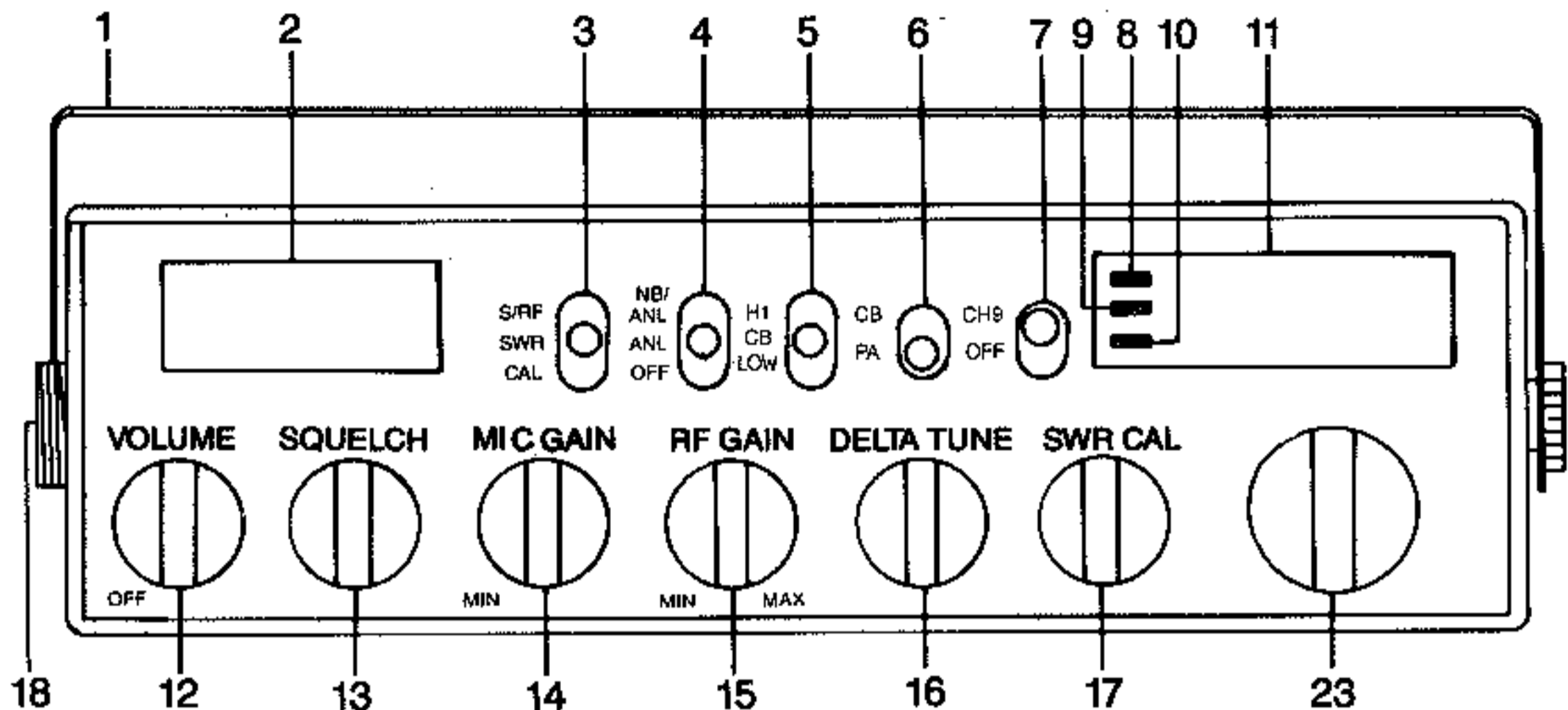
TRANSMITTER

The transmitter offers crystal-controlled operation on all 120 channels, AM 4 watts with average modulation capabilities is possible by the use of high-efficiency Transistors and low loss components, wiring, and mounting boards. The legal limit of power for this service is provided

POWER SUPPLY

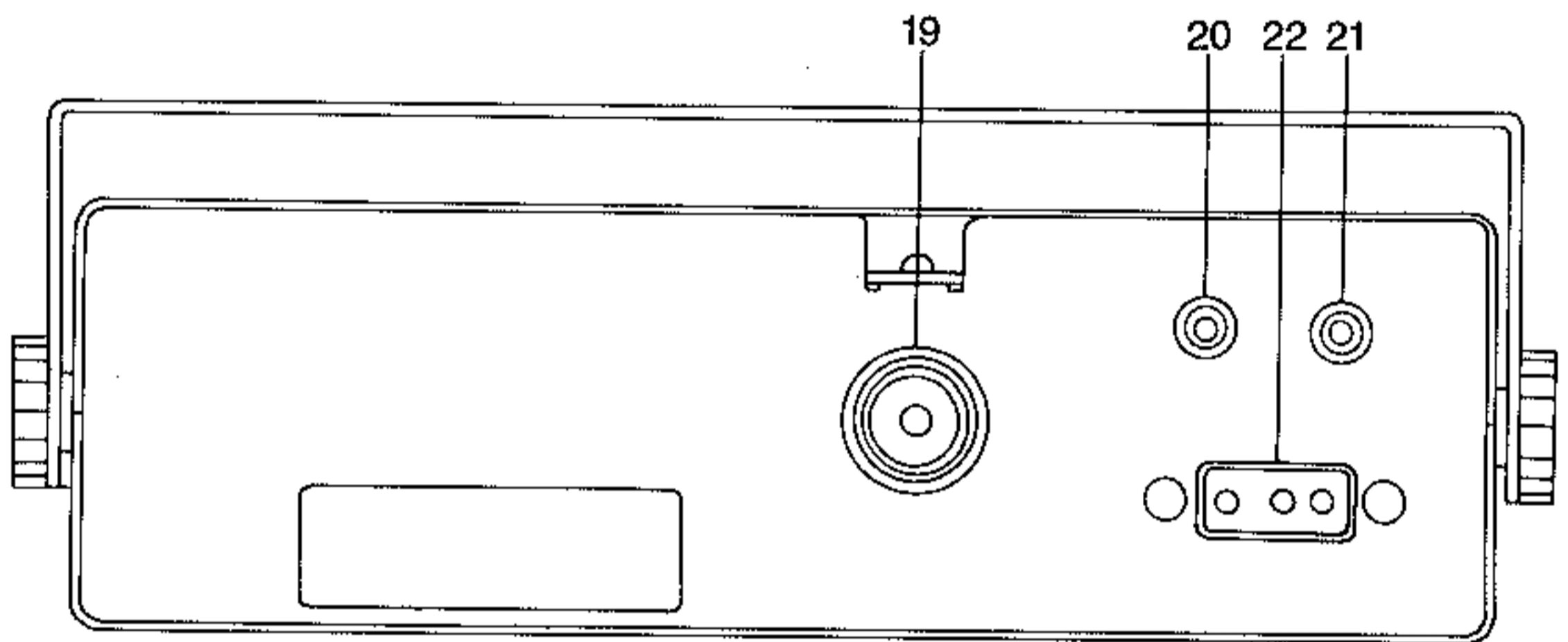
The transceiver is ready for connection to a 12 volt DC, negative or positive ground system. DC power is provided to the transceiver by means of a fused power lead.

OPERATING CONTROLS AND FEATURES



- (1) MOUNTING BRACKET Bracket simplifies installation for removal of unit.
- (2) S/RF-SWR/CAL METER At receive mode, meter indicate the relative strength of incoming signals.
In the transmit mode, meter indicate the relative strength of outgoing RF signal. When S/RF-SWR/CAL switch is selected CAL position, SWR CAL control VR adjusts the meter to SWR CAL position of third meter scale.
Where S/RF-SWR-CAL switch is selected SWR position, the meter indicates the SWR measurement on the bottom meter scale.
- (3) S/RF-SWR-CAL SWITCH This switch changes the meter function as discribed above paragraph (2).
- (4) NB/ANL-ANL-OFF SWITCH In the NB/ANL position, NB/ANL (Noise Blanker/Automatic Noise Limiter) circuits reduces electrical impulse noises, such as those caused by engine ignition systems, atmospheric noise and other electrical interference. NB circuits delete the noise in the IF AMP. ANL circuits clip the noise in the detector. In the ANL position, the ANL circuits is selected and the NB circuits does not operated.
- (5) HI/CB/LOW This HI/CB/LOW switch selects one of 3 band.
Low band frequency is 26,515-26,955 MHz. CB band frequency is 26,965-27,405MHz. High band frequency is 27,415-27,855 MHz. Detail frequency table is shown on page 8.

- (6) CB/PA SWITCH Changes your CB system from a CB function, using the internal speaker, to a Public Address function.
- (7) CH9/OFF SWITCH FOR EMERGENCY CALL/MONITOR (CHANNEL 9 OPERATION):
Just set the front slide switch (CH9/CB/PA) to CH9 position and the unit will be fixed only to channel 9. Or you can set channel 9 by rotating the channel Selector to "9".
- (8) HIGH BAND When HI/CB/LOW switch select high band, HIGH BAND LAMP will be lighted.
- (9) LOW BAND When HI/CB/LOW switch select low band, LOW BAND LAMP will be lighted.



- (10) AWI LAMP This Antenna Warning Indicator lamp alerts you to trouble in your antenna system that could damage your transceiver. When the AWI light comes on, you should stop transmitting immediately
- (11) LED DISPLAY LED DISPLAY indicates the channel selected by 40 position rotary switch.
- (12) ON-OFF/VOLUME Controls audio output volume and ON-OFF the power. The extreme counterclockwise position is power OFF state.
- (13) SQUELCH CONTROL This control is used to quiet the receiver during absence of receive signal.
Turn fully counterclockwise and turn slowly clockwise until the receiver noise disappears. Incoming signals will automatically release squelch action.
Setting too far clockwise will not allow weaker signal to release squelch action.
- (14) MIC GAIN CONTROL Adjusts the sensitivity of the microphone amplifier circuit.
When operating from a noisy vehicle, reducing the DYNA MIKE setting will usually

- improve your transmitted voice clarity. Rotating the control counterclockwise reduces the sensitivity and requires close-talking into the microphone.
- (15) RF GAIN CONTROL Controls the receiver sensitivity to reduce interference.
To decrease RF gain turn the knob counterclockwise. For the maximum receiver sensitivity, the RF Gain control must be rotated to extreme clockwise.
 - (16) DELTA TUNE CONTROL Fine tuning for the signals received on either the upper or lower side.
 - (17) SWR CAL CONTROL Adjust the meter to SWR CAL position which is small red black line at the sight of second meter scale.
 - (18) MICROPHONE INPUT 4 pin socket for push-to-talk microphone
 - (19) ANTENNA CONNECTION To match antenna lead-in cable (RG 58/U or RG-8U) with PL-259 type coaxial connector.
 - (20) PA SPEAKER JACK For Public Address (PA) operation, horn impedance should be in 8-16 ohm range.
 - (21) EXTERNAL SPEAKER JACK Impedance of any device such as headphone connected to this jack should be 8-16 ohms. Insertion of plug into jack automatically silences the transceiver internal speaker.
 - (22) DC POWER CONNECTOR 12 volts DC for transceiver supplied.
 - (23) CHANNEL SWITCH This rotary switch selects one of 40 channels for transmit and receive operation.

TRANSCEIVER INSTALLATION

MOUNTING

Always mount where controls are readily accessible. Unit may be mounted to the underside of the dashboard of a car, truck, etc., utilizing special bracket included with transceiver. Attach bracket to the underside of dashboard using the self-tapping screws supplied. Attach the transceiver to the bracket using the two knurled securing screws at the side.

Tilt the unit to the most convenient angle before tightening securing screws.

DC POWER CONNECTIONS

The transceiver is designed to operate from a battery source of 10.8 to 15.6 volts DC, employing either negative or positive ground electrical systems. The fused DC power cable supplied is used to make the necessary power connection to the transceiver. Red (fused) lead is connected to the positive (+) side of the electrical system and the black lead is connected to the negative (-) side of the system. In a negative ground vehicle, connect the Red lead to the "hot" point in the electrical system (battery positive), and the Black lead to any point connected to the vehicle chassis (battery negative).

In a positive ground vehicle, connect the Black lead to the "hot" point in the electrical system (battery negative), and the Red lead to any point connected to the vehicle chassis (battery positive).

For connection to the "hot" battery side a suitable post can usually be found on the fuse block. The transceiver draws a maximum of 1.5 ampere of current, therefore you can use a terminal which supplies power to the Radio or other accessory (Use the unfused input side. The DC power cable is equipped with its own fuse). Connection at this point will ensure DC power is automatically cut off to the transceiver when the ignition is tuned off.

IMPORTANT: DC VOLTAGE AT THE TERMINAL SELECTED ON THE FUSE BLOCK MUST BE AT LEAST 10.8 VOLTS FOR PROPER OPERATION.

ANTENNA CONNECTION

The lead-in cable from the CB antenna must be terminated with a PL-259 type male connector. Attach to the matching antenna input connector at the rear of the transceiver.

MICROPHONE BRACKET

Attach the microphone bracket provided to any convenient location.

MICROPHONE CONNECTION

Insert the 4 pin plug at the end of the coiled cord into the microphone socket.

DO NOT TRANSMIT WITHOUT AN ANTENNA CONNECTED TO THE TRANSCIEVER

IGNITION INTERFERENCE

Normally the suppression on modern automotive engines is adequate to prevent annoying interference to your CB transceiver. If it does not, consult your dealer who will recommend additional suppression measurements.

RECEIVING

1. Select desired channel using the channel Selector Switch.
 2. Rotate squelch control to the extreme counterclockwise position. Delta tune control set to center position. Rotate RF Gain Control to the extreme clockwise position. Set the function switches as follows
- | SW | POSITION |
|----------------|----------|
| S/RF-SWR-CAL | S/RF |
| NB/ANL-ANL-OFF | OFF |
| HI-CB-LOW | CB |
| CB-PA | CB |
| CH9-OFF | OFF |
3. Rotate the "VOLUME/ON-OFF" switch clockwise, to apply power. Operation will be instantaneous.
 4. Set the "VOLUME/ON-OFF" switch clockwise to a comfortable listening level (approximately 1/3 setting). The receiver is now ready to operate.

SQUELCH ADJUSTMENT

The squelch control eliminate annoying background noise in the absence of signals. To adjust the SQUELCH control properly turn up VOLUME until background noise is heard. Rotate the SQUELCH slowly clockwise until the background noise just disap-

pears. At this point the receiver will be quiet under "nosignal" conditions, however a reasonable strength incoming signal will overcome the squelch action and be heard. As the control is advanced the squelch action is progressively increased and stronger incoming signals are needed to overcome it. To receive weak signals or to disable the squelch circuit turn the control fully counter clockwise.

EXTERNAL SPEAKER JACK

Recommended plug for the EXT SPEAKER jack is "MINIPLUG" subminiature phone plug. The impedance of earphones or speakers connected should be 8-16 ohms. Insertion of a plug to EXT.SP.JACK silence the internal speaker.

TRANSMITTING

To transmit, depress the push-to-talk button on the microphone. The Red Transmit Indicator light will come on.

Use the microphone like a telephone speaking several inches from the face. Do not shout, use a normal speaking voice.

When you are transmitting, the receiver is silenced and reception is, therefore, impossible. In the same way, your signal cannot be heard by another station when he is transmitting — each must take turns. To receive again, simply release the microphone push-to-talk button.

USE AS PUBLIC ADDRESS SYSTEM

Provision has been made for Public Address (PA) operation utilizing the microphone and audio stages in the transceiver. For PA operation, use an external high efficiency public address horn type speaker with an impedance range of 8 to 16 ohms. Connect to the PA jack on the rear panel of the transceiver. The required plug is a subminiature phone plug. For Public Address (PA) operation, switch CB-PA SWITCH to PA position.

AVAILABLE CITIZEN BAND FREQUENCIES

Frequencies are listed in accompanying table.

Channel	Frequency			Channel	Frequency		
	LOW BAND	CB BAND	HIGH BAND		LOW BAND	CB BAND	HIGH BAND
1	26.515	26.965	27.415	21	26.765	27.215	27.665
2	26.525	26.975	27.425	22	26.775	27.225	27.675
3	26.535	26.985	27.435	23	26.805	27.255	27.705
4	26.555	27.005	27.455	24	26.785	27.235	27.685
5	26.565	27.015	27.465	25	26.795	27.245	27.695
6	26.575	27.025	27.475	26	26.815	27.265	27.715
7	26.585	27.035	27.485	27	26.825	27.275	27.725
8	26.605	27.055	27.505	28	26.835	27.285	27.735
9	26.615	27.065	27.515	29	26.845	27.295	27.745
10	26.625	27.075	27.525	30	26.855	27.305	27.755
11	26.635	27.085	27.535	31	26.865	27.315	27.765
12	26.655	27.105	27.555	32	26.875	27.325	27.775
13	26.665	27.115	27.565	33	26.885	27.335	27.785
14	26.675	27.125	27.575	34	26.895	27.345	27.795
15	26.685	27.135	27.585	35	26.905	27.355	27.805
16	26.705	27.155	27.605	36	26.915	27.365	27.815
17	26.715	27.165	27.615	37	26.925	27.375	27.825
18	26.725	27.175	27.625	38	26.935	27.385	27.835
19	26.735	27.185	27.635	39	26.945	27.395	27.845
20	26.755	27.205	27.655	40	26.955	27.405	27.855

TRANSCEIVER SERVICING

Transceiver has been fully tested prior to shipment and will not normally require further adjustments.

FUNCTIONAL BLOCK DIAGRAM

